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Cand wherein the first valving means, while sealed closed preventing fluid communication from the source, is adapted to urge a charge of pressurized fluid downstream through the second valving means to the patient, the second valving means partially restricting the flow to the patient.

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8. (Amended) A cassette for use in a system for controlling the flow of intravenous fluid from a source to a patient, the cassette comprising:

a membrane-based valve comprising:

a rigid housing, having a first mouth, a first passage, a second mouth, and a second passage; and

a compliant membrane; and

A2 a control valve located between the membrane-based valve and the patient;

the housing and the membrane coupled, defining a valving chamber, the first passage entering the valving chamber at the first mouth located such that flow of fluid via the first passage into the chamber may be prevented when the membrane is forced against the first mouth, the second passage exiting the valving chamber at the second mouth, so that a charge of pressurized fluid may be urged by the compliant membrane to continue flow from the valving chamber into and through the second passage via the second mouth toward the patient and may be provided to the patient when both the membrane is forced against the first mouth and the control valve partially restricts fluid flow.

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14. A cassette for use in a system for controlling the flow of intravenous fluid from a source to a patient, the cassette comprising:

a rigid housing; and

a membrane disposed adjacent the rigid housing;

A3 the rigid housing and the membrane defining a pressure-conduction chamber;

wherein a pressure-conduction chamber portion of the rigid housing is generally dome-shaped, the membrane has a filled-chamber position, in which position the pressure-conduction chamber is substantially at its greatest volume, and an empty-chamber position, in which position the pressure-conduction chamber is substantially at its smallest volume, and in which position the membrane rests against the rigid housing and assumes the dome shape of the pressure-conduction chamber portion of the rigid housing,

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the membrane having a structure for creating an instability in the filled-chamber position and promoting a collapse of the membrane from the filled-chamber position to the empty-chamber position.

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20. A cassette for use in a system for controlling the flow of intravenous fluid from a source to a patient, the cassette comprising:

a rigid housing; and

a membrane disposed adjacent the rigid housing;

the rigid housing and the membrane defining a pressure-conduction chamber;

wherein a pressure-conduction chamber portion of the rigid housing is generally dome-shaped, the membrane has a filled-chamber position, in which position the pressure-

conduction chamber is substantially at its greatest volume, and an empty-chamber position, in which position the pressure-conduction chamber is substantially at its

smallest volume, and in which position the membrane rests against the rigid housing and assumes the dome shape of the pressure-conduction chamber portion of the rigid housing,

the membrane having a structure which may be actuated to increase instability and

reduce resistance of the membrane to initial movement from the empty-chamber position to the filled-chamber position.

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